(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 254 862 A2

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
06.11.2002 Bulletin 2002/45

(51) Int Cl.[7]: **C01G 23/00**, H01M 8/12

(21) Application number: **02009246.6**

(22) Date of filing: **26.04.2002**

(84) Designated Contracting States:
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE TR
Designated Extension States:
AL LT LV MK RO SI

(30) Priority: **27.04.2001 US 843519**

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(54) Ceria based solid electrolytes

(57) The present invention relates to compositions of matter represented by the general formula

$$Ln_xLn'_{x'}A_yTi_zCe_{1-x-x'-y-z}O_{2-\delta}$$

wherein Ln is selected from the group consisting of Sm, Gd, Y, and mixtures thereof; Ln' is selected from the group consisting of La, Pr, Nd, Pm, Eu, Tb, Dy, Ho, Er, Tm, Yb, Lu, A is selected from the group consisting of Mg, Ca, Sr and Ba, $0.05 \le x \le 0.25$, $0 \le x' \le 0.25$, $0 \le y \le 0.03$, $0.001 \le z \le 0.03$, $0.05 \le x + x' \le 0.25$, $0.001 \le y + z \le 0.03$, wherein δ is a number which renders the composition of matter charge neutral. The compositions can be formed into sintered bodies suitable for use as solid electrolytes in devices including solid-state oxygen generators. Such sintered bodies have greater than 95% theoretical density at temperatures at or below 1600°C, and can be produced by a solid-state method.

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